



Introduction to AI, Machine Learning & Deep Learning Essentials (TTML6603)

Explore AI, ML and DL Differences, Advantages, Modern Uses. Techniques for Adoption, Tools, Algorithms and More

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Course Snapshot

- **Course:** Introduction to AI, **Machine Learning & Deep Learning Essentials (TTML5506-P)**
- **Duration:** 3 days
- **Skill-level:** Foundation-level machine learning skills for Intermediate skilled team members who possess Python programming skills. This is not a basic class.
- **Audience:** IT team members new to AI / ML and Data Science, such as Analysts, Developers, Testers, PMs, Administrators, Architects, Managers and others.
- **Hands-on Learning:** This course is approximately **50% hands-on lab to 50% lecture ratio**, combining engaging lecture, demos, group activities and discussions with machine-based student labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **flexible blended learning format** for combined onsite and remote attendees. Please also ask about our **Self-Paced / Video** or **QuickSkills / Short Course** options.
- **Public Schedule:** This course is available on our **Public Open Enrollment Schedule**.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools of choice and learning goals.

Overview

Introduction to AI, Machine Learning & Deep Learning Essentials is an engaging, hands-on training program designed to provide students new to these areas with a baseline understanding of the core technologies, skills, business application and tools surrounding them. These fast growing, critical technologies are currently shaping the future of IT, development and analytics.

This program combines expert in-person lecture, hands-on machine-based labs, live demonstrations and discussions that explore current trends, tools and skills, as well as advances in these areas. Working in a hands-on manner, attendees will gain a basic understanding of terms, skills and capabilities in this technology stack, providing them with a solid foundation for next-step learning as they pursue defined roles in these areas.

Learning Objectives

Led by our expert AI / Machine Learning practitioner, students will learn about and explore:

- The What and Why of AI, Machine Learning & Deep Learning – why is this important and exciting?
- Getting the Basics: High-level skills, vocabulary and terminology
- AI, Machine Learning and Deep Learning – what are the differences and uses?
- Latest trends and research
- Who's Using It and to What Advantage?
- How to adopt AI, ML and DL
- Hands-on Machine Learning – algorithms, neural networks, natural language processing & more
- Tools and Languages: Python, R, Spark, TensorFlow, Keras
- Deep Learning Essentials

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be easily adjusted to accommodate. We offer additional related Machine Learning, AI, Deep Learning, data science, programming (Python, R, Java, Scala etc.) and development courses which may be blended with this course for a track that best suits your learning objectives. Our team will collaborate with you to understand your needs and will target the course to focus on your specific learning objectives and goals.

Audience & Pre-Requisites

The general pre-requisite items below would be helpful for attendees to familiarize themselves with in order to gain the most from

the discussions and hands-on labs work planned for each general related skills area listed below. Students without supporting experience in certain areas can plan to follow along with labs or utilize them as demonstrations.

Some of the related useful skills

- **Required - Enterprise IT / Business Knowledge:** Attendees should have some familiarity with Enterprise IT as well as a general (high-level) understanding of systems architecture, as well as some knowledge of the business drivers that might be able to take advantage of applying data science, AI and machine learning.
- **Recommended - Advanced Math / Statistics:** Advanced math and essentials statistics knowledge is useful in understanding and working with Algorithms
- **Recommended – Basic Language / Scripting Knowledge:** Basic Python (or R) scripting is applicable to machine learning and deep learning. Basic Java is useful for working with some of the advanced tools such as Spark or TensorFlow.

Take Next / Follow-on Courses: This course is a core component of our **AI & Machine Learning Skills Path**, designed to trainer participants of all skill levels in modern AI, Machine Learning and Analytics skills across the enterprise. We offer courses in next level AI and Machine Learning, Deep Learning, Natural Language Processing, Applied Machine Learning (Chatbots, Intelligent Web) and many more related titles. Please contact us for details and next step recommendations based on your specific roles and goals.

Enhanced Learning Support: Please ask about our **Pre-Training Class Prep & Primer** offerings, **Skills Gap Assessment Services**, **Case Studies**, **Knowledge Check Quizzes**, **Skills Immersion Programs & Camps**, **Collaborative Mentoring Services** and **Extended Learning Support** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We will work with you to tune this course and level of coverage to target the skills you need most. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.

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| <p>1. Exploring Data Science – The Foundation of AI, Machine Learning & Deep Learning</p> <ul style="list-style-type: none"> • What is Data Science? • New Ways of Thinking about and using Data • Challenges of processing • Technologies • Strategies • Where does data science fit in? • DS ecosystem – AI, Machine Learning, Deep Learning • Data and the Scientific Method • Data Science vs. Data Engineering • Sharing Results with Colleagues • Recording experiments • The Data Science Team members • Data Science Infrastructure • Current Tools, Trends & Technologies • Applying Data Science to Your Industry | <p>vocabulary</p> | <p>Keras</p> |
| <p>2. Understanding AI</p> <ul style="list-style-type: none"> • AI - How did we get here? • Recent advances in data, hardware • Cutting edge research and applications • Getting the basics: Core terms and | <p>3. Understanding Machine Learning</p> <ul style="list-style-type: none"> • Who is leveraging this and why • Overview of ML – what’s the difference? • Related examples of ML algorithms and applications • Surrounding tools and technologies: Python and Spark <p>4. Machine Learning</p> <ul style="list-style-type: none"> • Supervised vs. Unsupervised • Classification • Regression • Clustering • Dimensionality Regression • Ensemble Methods <p>5. Understanding Deep Learning</p> <ul style="list-style-type: none"> • What is it, and how is this different than AI and ML? • Who’s using Deep Learning and Why • Deep Learning algorithms and applications • Surrounding tools and technologies: Python, TensorFlow, | <p>6. Expert Systems</p> <ul style="list-style-type: none"> • Rules Systems • Feedback loops • RETE and beyond • Expert Systems in practice <p>7. Neural Networks</p> <ul style="list-style-type: none"> • Neural Networks • Recurrent Neural Networks • Long-Short Term Memory Networks • Applying Neural Networks <p>8. Natural Language Processing</p> <ul style="list-style-type: none"> • Language and Semantic Meaning • Bigrams, Trigrams, and n-Grams • Root stemming and branching • NLP in the world <p>9. Image, Video, and Audio Processing</p> <ul style="list-style-type: none"> • Image processing and Identification • Facial Analysis • Audio Processing • Analyzing Streaming Video • Real-world AV processing |

10. Sentiment Analysis

- Sentiment: The beginnings of emotional understanding
- Sentiment indicators
- Sentiment Sampling
- Algorithmic Trading on Sentiment
- Predicting Elections

Student Materials: Each student will receive a **Student Guide** with course notes, code samples, setp-by-step written lab instructions, software tutorials, diagrams and related reference materials and links (as applicable). Students will also receive related (as applicable) project files, code files, data sets and solutions required for any hands-on work.

Lab Setup Made Simple. All course labs and solutions, data sets, software, detailed courseware, lab guides and resources (as applicable) are provided for attendees in our easy access, no installation required, remote lab environment. Our tech team will help set up, test and verify lab access for each attendee prior to the course start date, ensuring a smooth start to class and successful hands-on course experience for all participants.

For More Information

Need dedicated training? All courses can be presented **onsite** or **online**, or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses**, **self-paced learning** options, **recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training**, **Boot Camps**, **Skills Immersion Programs**, **Reskilling Programs**, **Skills Migration & Transition Programs**, and more. We collaborate with you to ensure all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

For more information about our dedicated training services, collaborative mentoring services, courseware licensing options, courseware development services, public course schedule, training management services, partner and reseller programs, or to see our complete list of course offerings and special offers please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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